

FORM PTO-1390 (Modified)  
(REV 11-2000)

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

**TRANSMITTAL LETTER TO THE UNITED STATES  
DESIGNATED/ELECTED OFFICE (DO/EO/US)  
CONCERNING A FILING UNDER 35 U.S.C. 371**

65008-034

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR

**10/031980**

INTERNATIONAL APPLICATION NO  
**PCT/GB00/02993**

INTERNATIONAL FILING DATE  
**7 August 2000**

PRIORITY DATE CLAIMED  
**6 August 1999**

TITLE OF INVENTION

**METHOD OF PRODUCING STRETCHABLE FABRICS**

APPLICANT(S) FOR DO/EO/US

**Morris, Paul A.J.**

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (24) indicated below.
4. ☐ The US has been elected by the expiration of 19 months from the priority date (Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
  - a. ☒ is attached hereto (required only if not communicated by the International Bureau).
  - b. ☒ has been communicated by the International Bureau.
  - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
  - a. ☒ is attached hereto.
  - b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4).
7. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
  - a. ☐ are attached hereto (required only if not communicated by the International Bureau).
  - b. ☐ have been communicated by the International Bureau.
  - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
  - d. ☐ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
10. ☐ An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).
11. ☒ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☒ A copy of the International Search Report (PCT/ISA/210).

**Items 13 to 20 below concern document(s) or information included:**

13. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☐ A **FIRST** preliminary amendment.
16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. ☐ A substitute specification.
18. ☐ A change of power of attorney and/or address letter.
19. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
20. ☐ A second copy of the published international application under 35 U.S.C. 154(d)(4).
21. ☐ A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
22. ☒ Certificate of Mailing by Express Mail
23. ☐ Other items or information:

**Harold W. Milton, Jr.**  
**HOWARD AND HOWARD ATTORNEYS, P.C.**  
 39400 Woodward Avenue, Suite 101  
 Bloomfield Hills, Michigan 48304

DATE \_\_\_\_\_

100109031980002

531 Rec'd PCT/P 25 JAN 2002

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

**Applicant** : Paul A. J. Morris :  
:  
**Serial No.** : Not Yet Assigned :  
:  
**Attny No.** : 65,008-034 : **GROUP:**  
:  
**Filed** : Concurrently Herewith :  
:  
**Title** : METHOD OF PRODUCING STRETCHABLE :  
FABRICS :

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**PRELIMINARY AMENDMENT**

Assistant Commissioner of Patents  
Washington, D. C. 20231

Dear Sir:

Please preliminary amend the above-identified application as follows:

**IN THE CLAIMS**

Please preliminary amend the following claims as follows:

Claim 3 has been amended as follows:

3. (Amended) A method as claimed in claim 1 in which the interlining material is a synthetic material which is thermoplastic and can be heat set, such as a polyester or polyamide textile material.

Claim 4 has been amended as follows:

4. (Amended) A method as claimed in claim 1 in which the bonding is carried out by coating or film which as well as bonding will impart stretch to the final combined product.

**Applicant: Paul A. J. Morris**  
**Attorney No.: 65,008-034**  
**Page 2 of 5**

Claim 6 has been amended as follows:

6. (Amended) A method as claimed in claim 4 in which the bonding coating or film is coated on either the woven non-synthetic fabric or the interlining fabric or is a film interposed between the two.

Claim 7 has been amended as follows:

7. (Amended) A method as claimed in claim 1 wherein the interlining material used is a fine woven polyamide or polyester fabric.

Claim 10 has been amended as follows:

10. (Amended) A fabric made by applying heat and pressure to the fabric in such a manner that the yarn strands substantially across the width of the fabric are forced closer together thus imparting generally semi-permanent stretch into the fabric while simultaneously at least partially bonding thereto a synthetic interlining fabric.

Please add the following new claims:

11. (New) A fabric as set forth in claim 10 wherein the woven fabric is a non-synthetic textile material which cannot normally be permanently set by heat alone.

12. (New) A fabric as set forth in claim 11 wherein the interlining material is a synthetic material which is thermoplastic and can be heat set.

13. (New) A fabric as set forth in claim 12 wherein the interlining material comprises a fine woven fabric.

14. (New) A fabric as set forth in claim 12 wherein said interlining material comprises one of a polyamide and a polyester.

**Applicant: Paul A. J. Morris**  
**Attorney No.: 65,008-034**  
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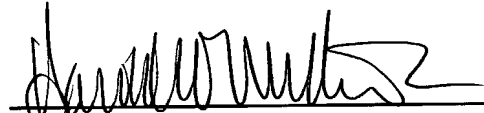
**REMARKS**

Claims 1-14 remain in this application. The entrance of this preliminary amendment for the purposes of clarifying the specification is respectfully requested.

**Respectfully submitted**

**HOWARD & HOWARD ATTORNEYS, P.C.**

1/25/02  
Date



**Harold W. Milton, Registration No. 22,180**  
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Bloomfield Hills, Michigan 48304-5151  
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VERSION WITH MARKS TO SHOW CHANGES MADE

IN THE CLAIMS

Please amend the claims as follows:

Please amend Claim 3 as follows:

3. (Amended) A method as claimed in [~~either of claims 1 or 2~~] claim 1 in which the interlining material is a synthetic material which is thermoplastic and can be heat set, such as a polyester or polyamide textile material.

Please amend Claim 4 as follows:

4. (Amended) A method as claimed in [~~any of claims 1 to 3~~] claim 1 in which the bonding is carried out by coating or film which as well as bonding will impart stretch to the final combined product.

Please amend Claim 6 as follows:

6. (Amended) A method as claimed in [~~any of claims 1 to claim 5~~] claim 4 in which the bonding coating or film is coated on either the woven non-synthetic fabric or the interlining fabric or is a film interposed between the two.

Please amend Claim 7 as follows:

7. (Amended) A method as claimed in [~~any of claims 1 to claim 6~~] claim 1 wherein the interlining material used is a fine woven polyamide or polyester fabric.

**Applicant: Paul A. J. Morris**  
**Attorney No.: 65,008-034**  
**Page 5 of 5**

Please amend Claim 10 as follows:

10. (Amended) A fabric ~~[produced in accordance with the method of the preceding claims:]~~ made by applying heat and pressure to the fabric in such a manner that the yarn strands substantially across the width of the fabric are forced closer together thus imparting generally semi-permanent stretch into the fabric while simultaneously at least partially bonding thereto a synthetic interlining fabric.

Please add the following new claims:

11. (New) A fabric as set forth in claim 10 wherein the woven fabric is a non-synthetic textile material which cannot normally be permanently set by heat alone.

12. (New) A fabric as set forth in claim 11 wherein the interlining material is a synthetic material which is thermoplastic and can be heat set.

13. (New) A fabric as set forth in claim 12 wherein the interlining material comprises a fine woven fabric.

14. (New) A fabric as set forth in claim 12 wherein said interlining material comprises one of a polyamide and a polyester.

\_\_\_\_\_

Conventionally, waistband interlining can be elasticated and the outer fabric of the waistband “rouched” or “gathered” providing for a degree of stretch but at the expense of compromising the “tailored” look and fit of the garment to which such an elasticated waistband is attached. Alternatively, it comprises a “non-stretch” interlining which acts as a stiffener stabilising the outer fabric, affording some degree of reinforcement and perhaps providing added resilience. The disadvantage of the latter system of construction is that there is little “give” or “ease” in that area of the garment incorporating the waistband, and the fit of the garment may become uncomfortable to the wearer for example after meals when the waist expands. In prolonged wear, the top of the waistband can be forced to “give way” and effectively “roll over”, rendering the look of the garment unsightly. In addition, a wearer falling mid-way between sizing of “off the peg” waistbanded garments selects a garment which is either too tight or too loose in wear.

In our European patent publication EP-B-0705356 we disclose a method of treating a woven fabric characterised in the combination of two stages - a first stage which includes applying heat and pressure to the fabric in such a manner that the yarn strands substantially across the width of the fabric are forced closer together thus imparting generally semi-permanent "ease" or "stretch" into the fabric, and a subsequent, second stage which includes affixing to the fabric treated according to the first stage of the method a selected interlining and/or interlining combination having inherent stretch whereby the semi-permanent "ease" or "stretch" imparted to the fabric during the first stage is made substantially permanent during the second stage.

The interlining or interlining combination used in the method of the above European patent publication must itself have sufficient stretch characteristics, and sufficiently powerful



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elasticity, in order to ensure that the woven fabric in the finished combination is brought back to its original length after stretching.

Such interlinings or interlining combinations are available but are relatively expensive to produce and may involve relatively expensive stretch yarns such as "Lycra" yarns.

The present invention seeks to provide a method of producing a combined fabric with similar stretch characteristics to that described in our above-mentioned European patent publication, initially employing less resilient and less expensive interlinings or interlining combinations, and additionally to provide a method capable of producing such fabrics in a single step process.

According to the present invention there is provided a method of treating a woven fabric to produce a stretchable fabric combination which comprises applying heat and pressure to the fabric in such a manner that the yarn strands substantially across the width of the fabric are forced closer together thus imparting generally semi-permanent stretch into the fabric while simultaneously at least partially bonding thereto a synthetic interlining fabric.

Preferably, the bonding is carried out employing a stretchable bonding agent or film.

While not restricted thereto, the woven fabric employed in the method of the invention will usually be of a non-synthetic textile material, for example wool or cotton, which can not normally be permanently set by heat alone. By contrast, the interlining material will normally be a synthetic material which is thermoplastic and can be heat set, such as a polyester or polyamide textile material.

The bonding coating or film is preferably material which as well as bonding will impart stretch to the final combined product and it is preferred for this purpose to use a polyurethane material. The material may be coated on either the woven non-synthetic fabric or the interlining fabric or may be a film interposed between the two. This is employed where additional 'pull' is required to give the necessary stretch and recovery

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to the final product. Where, for example, it is desired to attach a (non-stretch) interlining to a stretch fabric, then this may not be necessary, as discussed more fully hereinafter.

The method of the invention is preferably carried out by the machine as described in our above-mentioned European patent publication which comprises means for applying heat and pressure to a woven fabric, and transport means for effecting relative movement between the heat and pressure application means and the fabric whereby passage of the fabric through the apparatus results in the yarn strands substantially across the width of the fabric being forced closer together thus imparting semi-permanent stretch into the fabric. This process may be described as "compressive shrinking" for the purposes of simplicity in the present description. When applied to a non-synthetic woven fabric, compressive shrinking produces stretch but this is not permanent in the sense that it is gradually lost or, if a subsequent heat or steam treatment is applied, will be lost completely at once. Thus, in the process of our above-mentioned European patent publication, the second stage was used to fix, or render "permanent", the stretch characteristics.

In the process of the present invention the interlining material is both fixed to the woven non-synthetic fabric and at the same time is itself set so that the compressive shrinking applied to it is "permanent". Being bonded to the woven fabric it renders the stretch imparted to that fabric "permanent" also.

The interlining material used may be a fine woven polyamide or polyester fabric, preferably the latter, although other fabric structures could be used, such as needled or water entangled non-wovens. While the interlining supplied for use with our above-mentioned European patent publication needed to have a considerable degree of stretch and high elastic modulus, that used initially in the present invention may be of less stretchable and much cheaper material. The additional stretchability is supplied by the compressive shrinking and the extra elastic modulus may be supplied by the bonding material which is why polyurethane is preferred.

One passage through the machine may be sufficient to produce the finished product in that the bond produced by the bonding coating or film is sufficiently strong for the combination

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to withstand subsequent wear. Alternatively, if this is not the case, the combined fabric can be passed through a subsequent means such as that described in our above mentioned patent publication for affixing the fabric previously treated in the compressive shrinking area by a second application of heat and pressure to effect complete bonding.

As before, the fabric may be treated in full width form but typically it is treated in strips which are then formed into trouser or skirt waistbands. Clearly the cost of a machine to treat such strips of material is considerably less than that required to treat fabric in full width. It is therefore an advantage of the invention that, with the interlining necessary to stabilise the stretch in the woven fabric being effectively produced at the same time as it is affixed to the woven fabric, the interlining is produced in narrow width, and a full-width production machine for the interlining is rendered unnecessary.

There are, however, many applications where this process could be used in a wide width form, e.g. from 1.5 metres to 5 metres width, where there is a requirement to convert rigid fabrics into ones with linear stretch.

It has been found that, at the temperature normally used in the compressive shrinking process the interlining fabric, a thermoplastic synthetic material, typically a polyester fabric, is heat set so that the extra elasticity imparted to it by the compressive shrinking process is rendered "permanent".

Where stretch fabrics are utilised in the production of stretch trouser or skirt waistbands, the majority of manufacturers prefer to affix, e.g. fuse, a stretch interlining to the surface of the waistband. This stretch interlining is generally, although not always, of a non-woven material and is significantly more expensive than its 'rigid' equivalent. The interlining in this case is not required to impart elastic recovery properties to the waistband as the waistband fabric is already a stretch variety. The stretch interlining is used to make the waistband fabric more substantial and easier to handle in subsequent processing.

In accordance with a further embodiment of the invention a standard rigid fusible non-woven or other relatively rigid knitted material may be processed in narrow width form

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with the stretch waistband fabric through the above-mentioned compressive shrinking machine to convert the two into a laminate which has stretch characteristics in the length direction. As the waistband fabric is a stretch material, the interlining needs only to move with the fabric and is not required to provide additional stretch recovery, and thus a stretchable bonding agent is not required (although a bonding agent may be used).

In addition, the stretch fabric may be tensioned during processing with the 'rigid' interlining so that it is compressively 'shrunk' back to its original dimensions. That is, if the process achieves 20% shrinkage in the interlining, the waistband fabric would be pre-tensioned out by 25% of its length prior to compressive shrinking. After processing it would then shrink back to its original length.

While the fabric of the invention is primarily useful for waistbands for skirts, trousers and the like it is not so-limited. Other uses will become apparent to those skilled in the art. For example, as disclosed in our PCT application GB99/01146, parts of the woven fabric can be left unstabilised, or stabilised to a lesser degree, so that on subsequent relaxation the composite assumes a desired shape, for example a curved shape, which may be useful in many areas in garment construction.

The invention further extends to the combined fabric produced in accordance with the method of the invention.

**CLAIMS**

1. A method of treating a woven fabric to produce a stretchable fabric combination which comprises applying heat and pressure to the fabric in such a manner that the yarn strands substantially across the width of the fabric are forced closer together thus imparting generally semi-permanent stretch into the fabric while simultaneously at least partially bonding thereto a synthetic interlining fabric..
2. A method as claimed in claim 1 wherein the woven fabric is a non-synthetic textile material, for example wool or cotton, which cannot normally be permanently set by heat alone.
3. A method as claimed in either of claims 1 or 2 in which the interlining material is a synthetic material which is thermoplastic and can be heat set, such as a polyester or polyamide textile material.
4. A method as claimed in any of claims 1 to 3 in which the bonding is carried out by coating or film which as well as bonding will impart stretch to the final combined product.
5. A method as claimed in claim 4 in which the bonding coating or film is a polyurethane material.
6. A method as claimed in any of claims 1 to 5 in which the bonding coating or film is coated on either the woven non-synthetic fabric or the interlining fabric or is a film interposed between the two.
7. A method as claimed in any of claims 1 to 6 wherein the interlining material used is a fine woven polyamide or polyester fabric.

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8. A method as claimed in claim 1 wherein a standard rigid fusible non-woven or other relatively rigid knitted material is processed in narrow width form with a stretch waistband fabric to produce a laminate which has stretch characteristics in the length direction.
9. A method as claimed in claim 9, wherein the stretch fabric is tensioned during processing with the interlining so that it is compressively 'shrunk' back to its original dimensions.
10. A fabric produced in accordance with the method of the preceding claims.

## (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
15 February 2001 (15.02.2001)

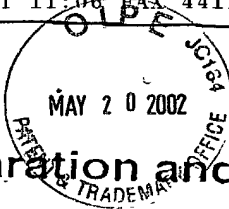
PCT

(10) International Publication Number  
**WO 01/11132 A1**

- (51) International Patent Classification<sup>7</sup>: D06C 21/00, 27/00
- (21) International Application Number: PCT/GB00/02993
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- (30) Priority Data:  
9918488.9 6 August 1999 (06.08.1999) GB
- (71) Applicant (for all designated States except US): **PRO-FIT INTERNATIONAL LIMITED** [GB/GB]; Unit 40, Albion Mills, Albion Road, Bradford BD10 9TF (GB).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): **MORRIS, Paul, A., J.** [GB/GB]; Pro-Fit International Limited, Unit 40, Albion Mills, Albion Road, Bradford BD10 9TF (GB).
- (54) Title: **METHOD OF PRODUCING STRETCHABLE FABRICS**
- (57) Abstract: A method of treating a woven fabric to produce a stretchable fabric combination which comprises applying heat and pressure to the fabric in such a manner that the yarn strands substantially across the width of the fabric are forced closer together thus imparting generally semi-permanent stretch into the fabric while simultaneously at least partially bonding thereto a synthetic interlining fabric employing a stretchable bonding agent or film. The woven fabric employed in the method of the invention will usually be of a non-synthetic textile material, for example wool or cotton, which can not normally be permanently set by heat alone. By contrast, the interlining material will normally be a synthetic material which is thermoplastic and can be heat set, such as a polyester or polyamide textile material. The bonding coating or film is preferably material which as well as bonding will impart stretch to the final combined product and it is preferred for this purpose to use a polyurethane material. The material may be coated on either the woven non-synthetic fabric or the interlining fabric or may be a film interposed between the two.
- (74) Agent: **WHARTON, Peter, Robert;** Urquhart-Dykes & Lord, Tower House, Merrion Way, Leeds LS2 8PA (GB).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
- Published:**  
— With international search report.
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.



WO 01/11132 A1

Docket No.  
65,008-034

# Declaration and Power of Attorney For Patent Application

## English Language Declaration

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

METHOD OF PRODUCING STRETCHABLE FABRICS

the specification of which

(check one)

☐ is attached hereto.

☒ was filed on January 24, 2002 as United States Application No. or PCT International Application Number 10/031,980 and was amended on \_\_\_\_\_

(if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119(a)-(d) or Section 365(b) of any foreign application(s) for patent or inventor's certificate, or Section 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate or PCT International application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s)

			Priority Not Claimed
<u>PCT/GB00/02993</u>	<u>Great Britain</u>	<u>7/8/2000</u>	<input type="checkbox"/>
(Number)	(Country)	(Day/Month/Year Filed)	
<u>                    </u>	<u>                    </u>	<u>                    </u>	<input type="checkbox"/>
(Number)	(Country)	(Day/Month/Year Filed)	
<u>                    </u>	<u>                    </u>	<u>                    </u>	<input type="checkbox"/>
(Number)	(Country)	(Day/Month/Year Filed)	



10031980.052002

I hereby claim the benefit under 35 U.S.C. Section 119(e) of any United States provisional application(s) listed below:

(Application Serial No.)

(Filing Date)

(Application Serial No.)

(Filing Date)

(Application Serial No.)

(Filing Date)

I hereby claim the benefit under 35 U. S. C. Section 120 of any United States application(s), or Section 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. Section 112, I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, C. F. R., Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application:

(Application Serial No.)

(Filing Date)

(Status)  
(patented, pending, abandoned)

(Application Serial No.)

(Filing Date)

(Status)  
(patented, pending, abandoned)

(Application Serial No.)

(Filing Date)

(Status)  
(patented, pending, abandoned)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

**POWER OF ATTORNEY:** As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (list name and registration number)

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Samuel J. Haidle	42,619	Raymond E. Scott	22,981
William H. Honaker	31,623	Randall L. Shoemaker	43,118
David M. LaPrairie	46,295	Steve C. Wichmann	37,758
Harold W. Milton	22,180	James R. Yee	34,460

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Second inventor's signature	
Date	
Residence	
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